DOCUMENT RESUME

ED 137 892 CS 501 713

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TITLE A Reformulation of the Issue of Over-the-Counter Television Drug Advertising Using a Health-Related Locus of Control Scale.
PUB DATE 77
NOTE 17p.; Paper presented at the Annual Meeting of the International Communication Association (Berlin, West Germany, May 29-June 4, 1977)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Drug Abuse; Drug Legislation; Locus of Control; *Publicize; *Television Commercials; *Television Research; *Television Viewing
IDENTIFIERS *Advertising; *Drug Use

ABSTRACT

The issue of whether or not television should continue to air commercial announcements for over-the-counter (O-T-C) drugs has been debated in the United States. On 8 December 1976, the Federal Communications Commission denied a petition to ban such television commercials between 6 A.M. and 9 P.M. in part because it could find little scientific research which specifically addressed the question of a cause and effect relationship between O-T-C drug advertising and use of O-T-C drugs. This paper analyzes interview data from 200 residents of Carbondale, Illinois. Stepwise multiple discriminant analyses generated significant discriminant functions for two models. In both analyses, interpersonal sources of information (received and sought) best discriminated between respondents with either internal or external locus-of-control orientations regarding health. The investigators conclude that the presumed causal link which ties television viewing of O-T-C drug commercials and O-T-C drug use in a "hypodermic-needle-like fix" is too sweeping and simplistic an explanation. (Author/JM)

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A REFORMULATION OF THE ISSUE OF OVER-THE-COUNTER TELEVISION DRUG ADVERTISING USING A HEALTH-RELATED LOCUS OF CONTROL SCALE

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Presented at the session on "Health Communication Effects on Consumer Resources," Health Communication Division, International Communication Association meetings, May 29 - June 4, 1977, Berlin, West Germany

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CS 501 713

A REFORMULATION OF THE ISSUE OF OVER-THE-COUNTER TELEVISION

DRUG ADVERTISING USING A HEALTH-RELATED LOCUS OF CONTROL SCALE

In late May, 1976, the Federal Communications Commission (FCC) and the Federal Trade Commission (FTC) held joint panel discussions regarding whether or not televised over-the-counter (o-T-C) drug advertising should be banned from television airwaves from 6 a.m. to 9 p.m., as asked in a petition by Massachusetts Attorney General Francis X. Bellotti and several other state attorneys general. Concerns with these ads primarily were due to presumed dysfunctional effects upon children and others, i.e., claims that (1) O-T-C ads may lead to misuse of O-T-C products by children, and (2) O-T-C ads may lead to misuse and abuse of illicit drugs by children, adolescents and adults.

Evidence of presumed links between TV ads and public misuse of a variety of drugs is sketchy at best, as will be shown in a review of the few empirical studies which have examined possible links. However, emotional and argumentative points of view have been expressed, most often relating O-T-C ads and misuse behavior in a cause and effect sequence. For instance, Anthony Kales of the Pennsylvania State University School of Medicine told the Senate Monopoly Subcommittee in December, 1975, that O-T-C advertising "encourages the widespread use of drugs for what usually are responses to normal frustrations of life....I believe that for youngsters it is a very small step to extend this concept of immediate mood alteration with drugs of abuse" (Anon., 1976).

By early December, 1976, the FCC felt it had heard enough evidence to rule against the wishes of the petitioners, saying: "We simply do not know, as a matter of intuition or 'in-dwelling administrative expertise,' whether the hypothesis of a causal connection between advertising and drug abuse or misuse should be accorded any degree of credence or credibility. It would be irresponsible in the extreme for an administrative agency to ban otherwise lawful advertising on the basis of sheer speculation (FCC, 1976b,318)."

The Media as Provider of Health and Medical Care Information

The issue of O-T-C drug advertising and drug use, and communication behavior, appears to be embedded in a larger issue, that of the assumed "health care crisis" in America today. Investigation of a nationwide sample has shown that "the population appears to be primarily concerned with accessibility of services and protection against financial hardship resulting from the rising costs of medical care, and they appear open to alternative methods of attaining these ends" (Andersen, Kravits & Anderson, 1971, pp. 51-52). If the public feels that the health care system in the United States is "closed," not responsive to its needs, then by necessity other alternatives must be sought. These other avenues of health care maintenance would seem to include self-diagnosis and self-medication, including the use of O-T-C drugs. The media, through O-T-C advertising, then become a major source of information about health care.

The question of the media's effectiveness in this task was broached by Maccoby and Farquhar (1975) who examined the effect of "intensive instruction" and a mass media campaign on reducing the risk of coronary heart disease. The investigators worked at the community level (three towns in California, one town serving as control) in an attempt to reduce risk-taking behaviors such as smoking, poor diet habits, and lack of proper exercise. The media campaign was bilingual, so as to reach both English and Spanish speaking people, including radio, newspapers and television, as well as direct mail and billboard advertising. In the intensive instruction procedure a subsample of high-risk adults in one of the California towns was selected. In this treatment high-risk individu-

als were subjected to behavior modification strategy, receiving intensive instruction in small groups.

The data compiled by Maccoby and Farquhar, while not complete, do provide evidence which is indicative of the importance of the media as a source of health and medical information, even though the results provide evidence for a stronger impact of interpersonal contacts (intensive instruction):

> In terms of information, attitudes, and behavior, people in the two towns subjected to media programming and other forms of persuasion changed more than did the people of the control town. Furthermore, people in the high-risk groups who received intensive instruction changed more than people who were only exposed to general mass-media information (Maccoby and Farquhar, 1975, p. 122).

Wright (1975) reports an investigation of a small sample of respondents regarding patterns of information-seeking about medical and health care. The results indicate that health care information received from newspapers and magazines was reported by respondents as most helpful. Radio was the least used of all the media for information regarding health care. Information from television was not reported as being very useful by any of the respondents, who watched dramatic medical programming. The researcher did not report any data concerning information received from TV O-T-C drug advertising.

O-T-C Drug Advertising on Television: Criticisms and Research

The concern with O-T-C advertising on television continues unabated. For instance, testimony was given in 1974 before the National Council of Churches' Committee on Alcohol and Drug Problems as a step in considering support of regulation of O-T-C advertising through Congressional action. Critics claimed that O-T-C drug advertising was contributing to general drug abuse "by creating a climate of acceptance for the ethic 'better living through chemistry'" (Price, 1974, p. 203).

Berger (1974) contends that, while O-T-C drug advertising is not the single cause of the "pain, pill, pleasure" syndrome, it is an important contributory cause. According to Berger, people with a physical or emotional discomfort (upset stomach, headache, irregularity, etc.) take a pill and obtain relief. "Advertisements stimulate anxiety fears, which they say can be relieved by consumption of various things. Problems are solved by taking 'magic pills'" (Berger, 1974, p. 209). Berger believes that this "pill popping model" which sanctions the use of proprietary drugs becomes "ingrained" in the psyches of the audience and reinforces excessive, sometimes dangerous drug use.

Braren (1974), also a critic of O-T-C drug advertising, contends that the advertising leads to "widespread consumer misunderstanding of the utility and need for drugs" (Braren, 1974, p. 213). This misunderstanding, according to the author, is a result of deceptive strategies used by O-T-C drug advertisers. These tactics, Braren contends, all lead to improper self-diagnosis as the consumer attempts to find relief.

Johnson (1974), Watson (1976) and Kuriansky (1976) are also sharp critics of O-T-C drug advertising. Television, according to these critics, provides the illusion of social approval for drug taking which in turn leads to the use of illicit as well as proprietary drugs.

Mosher (1976), another critic of O-T-C drug advertising, approaches the issue from a different standpoint. O-T-C advertising, she says, plays upon the social roles and functions of women in society, where the role of the female as mother figure and sex object are "glamorized." Mosher feels that this sex stereotyping creates a serious misunderstanding of health and the human experience. Normal human activities are categorized as being "symptomatic of psychological and physiological illnesses" which encourages a heightened use of, and reliance on, chemical preparations (Mosher, 1976, p. 77).

Jenson and Christiansen (1976) report an attempt by the Utah State Division of Alcoholism and Drugs to ban O-T-C drug advertising based upon a survey of drug use by Utah residents. Results indicated that 11.8 percent of Utah's population reported use of O-T-C sleep aids, 21.7 percent used O-T-C stimulants (with use concentrated within younger age groups), 16.1 percent of the state's population (above 14 years of age) reported use of O-T-C tranquilizers, 37.9 percent used cough depressants on one or more occasions during the preceding year and 34.3 percent used O-T-C "pain killers." In terms of attitudinal data, the study suggested that a majority of citizens of Utah viewed non-medical use of drugs as being a problem, but accepted the notion of consuming over-the-counter or prescription drugs (Jenson & Christiansen, 1976, p. 67).

The Utah State Board on Alcohol and Drugs drafted a resolution intending to curtail O-T-C drug advertising in the state. The strategy consisted of an initial information campaign designed to present the problem of advertising as it related to the use of drugs by Utah residents. This approach provided for the formation of "community-based" interest groups which would lobby for acceptance of the Board's resolution and exert pressure on legislators to ban O-T-C drug advertising in the state.

Warnke, O'Keefe and Kiev (1974), who represented the Proprietary Association at the 1974 National Council of Churches' Committee review of O-T-C drug advertising, suggest that there is "room for self-medication" because certain illnesses are readily recognizable and can be treated without burdening the health care profession. To serve their purpose, O-T-C drugs used for self-medication must be readily available. Therefore, they must be advertised and promoted so that the public will become familiar both with the symptoms and the product.

Halberstam (1976) feels that blaming drug abuse among teenagers on O-T-C drug advertising is absurd. He sees no clear evidence supporting any connection between O-T-C drug advertising and illicit drug use.

Kanter (1976) conducted a three-phase research project on O-T-C drug advertisements which dealt with, (1) recall of drug advertisements by students in grades five, seven and eleven; (2) a survey whereby students were questioned on attitudes regarding drugs; and (3) copy research, where students viewed advertising and were asked open-ended questions on receptivity and comprehension. The findings indicate the following: (1) "Brand and product awareness does not appear to be greater for pharmaceuticals than for other product categories among students." But Kanter did find a latent awareness of brand advertising (p. 127). (2) Advertising for drugs does not seem to be any more important than other social factors in the students' lives, e.g., friends, family, teachers. Kanter, therefore, feels that advertising should be considered in the "context" of the total environment. Advertising itself ". . . cannot be uniquely responsible for values, attitudes, and beliefs" (p. 127). (3) Respondents feel that advertising might contribute to product misuse. Kanter feels that advertising may serve as a "reinforcing" agent or as a means of "reducing cognitive dissonance" (p. 128). (4) Kanter found that there is a possibility for younger school children to be most receptive and least critical of advertisements. According to Kanter, ". . . pharmaceutical campaigns about the ingestion of O-T-C drugs, by their very presence in the mass media, seem a potential influence on younger people by presenting a symbolic, cultural approval" (p. 129). Kanter's analysis that younger children would be most affected seems to be consistent with the information processing abilities of children which Ward and Wackman (1973) found based on Piaget's cognitive development theory. (5) Kanter feels that younger children would be most receptive to media produced anti-drug campaigns, because of their "unskeptical attitude toward advertisements in general" (p. 129).

Barcus (1976) in a content analysis of O-T-C drug advertising found, in general, that O-T-C drugs are promoted like other consumer products. In general, while most O-T-C drug commercials included a description of some symptom for which the product was intended, other information which would be of prime impor-

tance was not included. For instance, Barcus found only 31 out of the 99 researched commercials specified any active ingredients; only 17 of the drug products emphasized for whom the drug was intended; only 49 of 99 commercials made any reference to the duration or length of effect of the drug. Barcus also emphasizes that only 2 of the 99 commercials made any statements regarding side effects or harm from improper use of the drug.

In perhaps the most extensive examination of available data to date, NBC television network researchers report some interesting and mixed findings about the presumed associations between television drug advertising and use of licit and illicit drugs by adolescent boys (Milavsky, Pekowsky & Stipp, 1975-76). Using a panel design which enabled them to examine trends over the time period from May, 1970, to December, 1973, these investigators interviewed the same boys from low- and middle-income, black and white families on five separate occasions. While the investigators found a weak relationship between cumulative drug advertising exposure and proprietary drug use, they found a negative relationship between drug advertising exposure and use of marihuana. That is, the more television watched by an adolescent boy in the sample, the less likely he was to use marihuana or other illicit drugs. The researchers report the negative relationship remained stable, even after controlling for a large number of possible explanatory variables, including city, age, race, I.Q., socioeconomic status, relations with parents, grade average in school, attitudes about drug use and friends' use of drugs. Further, the NBC researchers found "no apparent tendency for those who had used more proprietary drugs to show greater use of illicit drugs than those who had used less" (p. 472). Finally, the NBC research team found that an attitudinal measure of "readiness to take drugs" was weakly related to use of both proprietary and illicit drugs, but they could not establish a relationship between television drug advertising exposure and that attitudinal measure.

The Construct of Internal Versus External Locus of Control as an Approach to Reformulating the Issue of O-T-C Drug Advertising

The research conducted on the effects of mass communications since Klapper (1960) has served to discredit the notion of a hypodermic needle theory of mass communications. However, the critics of O-T-C advertising seem to imply that the hypodermic needle in fact does exist. Consistent with Kanter (1976) and Milavsky et al. (1976), it would seem that the effects of O-T-C drug advertising must be considered within the context of other social influences. The construct of internal versus external locus of control offers a feasible approach to examining O-T-C drug use, media behavior and social relationships on the basis of differences along an important personality dimension.

The construct of locus of control is associated with Social Learning Theory (SLT), and can be defined, simply, as:

> Internal control refers to the perception of positive and/or negative events as being a consequence of one's own actions and thereby under personal control; external control refers to the perception of positive and/or negative events as being unrelated to one's own behaviors in certain situations and therefore beyond personal control (Lefcourt, 1966, p. 207).

In SLT, there are four classes of variables: behaviors, expectancies reinforcements and psychological situations. Basically, the SLT paradigm provides for the potential for behavior to occur in any specific psychological situation as a function of the expectancy that the behavior will lead to a particular reinforcement in that situation and the value of that reinforcement (Rotter, 1975, p. 57). Expectancies are determined by experiences in other situations that the individual perceives as similar to the "current" particular situation (Rotter, 1975, p. 57).

Rotter (1975) contends that the generalized expectancy that could be included in a predictive formula is arbitrary in the breadth of situations it

might include. Further, according to Rotter, ". . . we would expect that the more narrowly we define our generalized expectancy, the higher the prediction that results" (pp. 58-59). This narrower generalized expectancy would allow for better prediction only for situations of the "same subclass" but would lose predictive power for other situations. On the other hand, a very broad definition of generalized expectancy would product significant but lower levels of prediction across a wide range of behaviors.

Rotter (1966) has developed an Internal-External Control Scale, consisting of a 29 item, forced choice scale. Six of the items are fillers; the other 23 offer choices between internal and external belief statements. Rotter reported good discriminant validity for the I-E scale indicated by low correlations with intelligence, social desirability and political affiliation (Joe, 1971, p. 620). However, recent findings suggest, contrary to Rotter, that the I-E scale is not totally free of the social desirability set (Joe, 1971, p. 620).

Based upon Rotter's original conception, the I-E scale is unidimensional. More recent factor analytic studies, as reviewed by Joe (1971), have found more than one dimension to explain the variance in the I-E scale (pp. 621-622). One of the results of the recent factor analytic studies, which indicate a multdimensionality as opposed to a unidemensionality underlying the I-E scale, is a move by researchers to develop subscales from the original I-E scale.

Wallston and Wallston (1973) address the problem of defining the specificity of generalized expectancy with regard to health behavior. According to these authors, the possibility remains open as to the development of an I-E scale which specifically deals with behavior in health situations. The authors point to the fact that examinations of health-related behaviors and the I-E construct have only employed Rotter's (1966) generalized expectancy scale. For example, Seeman and Evans (1962), using a modified version of a generalized expectancy I-E scale, investigated the behavior of tuberculosis patients. Their results indicated "internals" knew more about their conditions, and contrary to expectations, were more satisfied with available information than were "externals." MacDonald (1970), in an investigation of use of birth control, found that internals were more inclined to practice some form of birth control than externals.

It seems, generally, that situation specific scales for measuring locus of control are feasible and justifiable. However, when interpreting the results in studies where narrowly defined generalized expectancy scales are used, one should be careful not to attempt to infer to broad classes of behavior which are not encompassed by the definition of expectancy. Also, depending upon how the specific scales are constructed, the direction of results could well be different than might be expected with use of the generalized I-E Scale (Rotter, 1966).

Research Objectives

The present study was designed to investigate two potential differences between people defined as internal controllers of health and external-system controllers of health on the basis of scores derived from a specific instrument measuring locus of control attitudes toward health care, for use of O-T-C drugs, advice receiving patterns, advice seeking patterns, television viewing, perceived effect of television advertising and drug advertising recall. Two research questions were generated:

1. Will internal controllers of health differ from external-system controllers on a discriminant function generated from O-T-C drug use, advice received on O-T-C drug use, exposure to O-T-C television drug ads, perceived effect of television ads and O-T-C drug advertising recall?

2. Will internal controllers of health differ from external-system controllers on a discriminant function generated from O-T-C drug use, advice seeking concerning O-T-C use, exposure to O-T-C television drug ads, perceived effect of television ads and O-T-C drug advertising recall?

Method

Data were collected during late June and early July, 1976, via telephone interviews with 200 residents of Carbondale, DeSoto and Murphysboro, Illinois. The 200 completed interviews were obtained on the basis of an interval-random sample generated from the telephone directory of the respective communities. Final completion rate was 51.8 percent of telephone numbers sampled, with 69 refusals (17.9%), 41 no-answers (10.6%) and 76 numbers out of order or not in service (19.7%).

Included in the interview schedule and of primary importance here were five modified Likert items which provided a measure of locus of control of health (see Appendix A). Also, respondents were asked whether or not they used six product types of O-T-C drugs (antacid products; cough, cold, hayfever or allergy products; aspirin or other pain relievers; sleep aids or sedatives; vitamins or mineral preparations; and laxatives). For each of the six product categories respondents were asked if they received advice from anyone regarding O-T-C drugs and, if so, from whom. Also, for each of the six product categories, respondents were asked if they ever asked anyone for advice regarding O-T-C drugs and, if so, who they asked. Respondents were asked if they watched television on the date of the interview before noon, and between noon and 5:30 p.m. They were also asked if they watched television the evening before from 5:30 p.m. to 10 p.m. and the night before from 10 p.m. to bedtime. The purpose of breaking television viewing into four different time periods was to account for the different levels of O-T-C drug advertising which Barcus (1976) reports for these viewing periods. Thus, the measure of television exposure is a weighted and summed index of potential exposure to drug commercial announcements for each respondent's reported television viewing for the 24-hour period immediately prior to being interviewed. Respondents also were asked if they could recall any O-T-C drug ads seen on television the day of or the night before the interview. Finally, respondents were asked if they felt television advertising had an effect on what people buy.

The five items which serve as the locus of control index in this study were developed as an index by Ware and Jarvis (1976), with one modification: "Some home remedies are still better than prescribed drugs for curing illness" was changed to read, "Some drugs you don't need a doctor's prescription for are still better than prescribed drugs for curing illness." The five items were summed for each respondent to create the index of internal control of health versus external-system control of health.

Internal consistency and item-test correlations for the locus of control instrument were calculated via a procedure outlined in Tyler and Fiske (1968). The average interitem correlation (r_{ij}) was 0.19; Cronbach's alpha (r_{tt}) for the five items was 0.55. Projected to an index of 100 items, the average interitem correlation was 0.19 and Cronbach's alpha was 0.96.

Based upon the summed total of the locus of control index it was possible to differentiate between the respondents in the sample as internal controllers of health or external-system controllers of health. A high score on the index indicated externality, and a low score internality. The sample was split at the median (11.471 rounded to 11), where the scores ranged from a low of 5 to a high of 15. Based upon this splitting criterion, 98 people formed the internal control group and 96 the external control group.

Once the two locus of control groups were defined, discrimination between the groups was attempted through the use of two stepwise multiple discriminant analyses. The first model assessed the relationship between the internals and externals and the use of O-T-C drugs, television drug commercial exposure during four different periods of time, perceived effect of television ads, O-T-C drug advertising recall and advice received from interpersonal contacts (family, relatives, friends, professionals, media and others). The second model assessed the relationship between internals and externals and the use of O-T-C drugs,[1] television drug commercial exposure during four different periods of time during

the day, perceived effect of television ads, over-the-counter drug advertising recall and seeking advice from information sources (family, relatives, friends, professionals,[2] media and others). The multiple discriminant analyses were stepwise models which minimized the Wilks lambda (Nie, Hull, Jenkins, Steinbrenner & Bent, 1975, pp. 434-467). In both multiple discriminant models, use of O-T-C drugs was entered first in the equation followed by the remaining variables. Once the variable was entered, it had to meet inclusion standards to be retained (Nie, et al., pp. 434-467).

For each of the two multiple discriminant models one function was generated as the maximum number of functions. If the function was significant, the discriminant coefficients were examined to determine which variables contributed to the function and whether the contribution was positive or negative and, at the same time, the magnitude and sign of the group centroids for both the internals and externals were examined.

Using the two multiple discrinimant models it should be possible to determine whether there is any difference between the locus of control groups when O-T-C drug use, television drug commercial exposure and O-T-C drug information patterns are considered simultaneously in a linear weighting model. If differences do exist, further evidence can be offered as an argument against the hypodermic needle theory of mass communications in general, and against its "assumed" existence in O-T-C drug advertising in particular.

Findings

In both analyses significant discriminant functions were generated. In the analysis of receiving advice, the classification procedure correctly classified 68.4 percent of the internals and 44.8 percent of the externals. In the analysis of seeking advice, the classification procedure correctly classified 65.3 percent of the internals and 56.2 percent of the externals.

The results of the first multiple discriminant analysis are shown in Table I.

Insert Table 1 About Here

The discriminant function generated by the first discriminant model, received advice regarding O-T-C drugs, included the following variables with negative coefficients (in descending order of magnitude): received advice about O-T-C drugs from a professional, received advice about O-T-C drugs from relatives, received advice about O-T-C drugs from friends, received advice about O-T-C drugs from a family member and use O-T-C drugs. The coefficient for O-T-C drug use is quite low in magnitude, however. The group centroid for the externals is in a negative direction, while that for the internals is in a positive direction. Externals have significantly higher group mean scores (all are significant at $p < .05$, with O-T-C drug use found at $p < .06$) on all of the variables with negative coefficients in the same direction as the externals' group centroid. Externals, therefore, seem associated with a function where interpersonal advice about O-T-C drugs is of greater importance than television and media variables when examined in the context of O-T-C drug use. In fact, all the media variables originally entered into the stepwise multiple discriminant equation, including advertising recall and perceived effect, were deleted from the analysis as they did not meet minimum inclusion levels. It is important to note advice from professionals has the highest coefficient on this function, with the direction corresponding to the direction of the externals' group centroid. Certainly, this would be consistent with the "expectancies" which were defined by the index which was used to measure locus of control.

The results of the second multiple discriminant analysis are shown in Table 2.

Insert Table 2 About Here

The discriminant function generated by the second discriminant model, sought advice regarding O-T-C drugs, included the following variables with positive coefficients (in descending order of magnitude): asked family member for advice about O-T-C drugs and belief that television ads have an effect on what people buy. The following variables had negative coefficients (in descending order of magnitude): asked a friend for advice about O-T-C drugs, asked professionals for advice about O-T-C drugs, asked some other person for advice about O-T-C drugs and use O-T-C drugs. The group centroid for the externals is in a negative direction, while that for the internals is in a positive direction. For use of O-T-C drugs ($p < .06$), asked friends for advice about O-T-C drugs and asked professionals for advice about O-T-C drugs ($p < .05$), the externals have significantly higher group mean scores. Externals seem associated with a function where, when considered in the context of O-T-C drug use, information seeking from interpersonal contacts, particularly professionals and friends, is dominant over information received via the media. Again, as with the previous analysis, professional advice, this time sought after, is clearly associated with the externals, which would seem to indicate a very specific "expectancy."

Summary and Conclusions

Discriminant analysis was used to analyze data from 200 adult respondents living in the Carbondale, Illinois, area. Of primary concern was the specification of variables which would discriminate between two groups of persons, i.e., those who believe their health to be in their own hands (internal locus of control) and those who believe their health to be regulated and influenced by a general human system of health care (external locus of control). Of primary concern was the possible role played by the mass media of communication in affecting the person's O-T-C drug use, and beliefs concerning the locus of control relevant to personal health, as compared to several other groups of interpersonal communication variables. Two stepwise multiple discriminant models concerning the interpersonal and mass media communication variables were tested. Both models discriminated between the two groups at a statistically significant level. The first model included O-T-C drug use, a variety of media variables and reported sources of interpersonal advice given the respondent concerning whether or not six categories of O-T-C drugs should be used. The second model was similar to the first, except that sources of advice actively sought by the respondent were substituted for sources of advice received.

In the first model, interpersonal communication variables best discriminated between groups, with professionals, relatives, friends and family members being most influential, in that order.

In the second model, interpersonal communication variables again were most important in discriminating between the groups. However, in this model, the perceived effects of television commercials on consumer purchasing behavior also aided in discriminating between the internals and externals. Friends, professionals, family members and others were the dominant interpersonal sources of advice sought by respondents.

In both models, the personal use of six categories of O-T-C drugs also helped discriminate between internals and externals, but in both cases the drug use variable was the least important of the equation.

Media variables generally did not distinguish between internals and externals. These variables included recall of television ads for O-T-C drugs, reported attempts by media messages to influence O-T-C drug attitudes and use and potential exposure to television O-T-C drug commercials.

The use of O-T-C drugs, as indicated, aid in discriminating between the two groups of respondents, with a univariate F-ratio of 3.49, significant at the .06 level. Externals tend to use more O-T-C drugs than do internals, a finding which was not expected, given the previous finding of more use of drug medications by internals (MacDonald, 1970). Regarding the five variables which were summated in order to score respondents according to internal/external locus of control, the

finding can perhaps be accounted for by noting that the items tend to isolate internals who are anti-drugs of any kind, including O-T-C proprietary medicines. Thus the "hard core" internal, as the respondent has been measured, is a "grin-and-bear-it" type who has no special faith in professional medicine or even self-medication. Overall, it seems fair to say that individual differences seem related to the use of O-T-C drugs, and that any problems which arise due to misuse of O-T-C or illicit drugs are not attributable to media influences alone. In fact, looking at other discriminating variables which help distinguish between respondents in terms of their individual differences, both "advice given" and "advice asked" variables appear (taking place in a variety of interpersonal settings) as significant discriminating variables; therefore, one would expect interpersonal communication variables as a component of social relationships to play an important contributory and environmental role in influencing individuals to use or not to use drugs.

This conclusion is underscored by a previous analysis of these data by the authors (Ostman, Trager, Atwood & Jarvis, 1976), which used stepwise regression analyses to predict the dependent variables of O-T-C drug use and attitude toward regulation of television drug commercial announcements. In these analyses, 13 different predictor variables were used to predict to the criterion variables. A total of 19.9 percent of the total variance in O-T-C drug use was accounted for by 11 variables. The best predictor was advice asked from friends (8.3% of the variance). Media variables played a minor role. The 13 variables generally did not predict the respondents' attitude toward the regulation of television drug commercial announcements. Several demographic and social categories variables, including age, sex, total household income and education, also were not particularly important in predicting O-T-C drug use or attitude toward television commercial regulation. Contrary to expectation, there was no correlation between exposure to television drug ads and use of O-T-C drugs (zero order correlation of .05). A similar nonsignificant finding was observed between advice received from the mass media and use of O-T-C drugs (zero order correlation of -.03, N=199).

This study did not deal with the effectiveness of O-T-C drug advertising on the consumer's purchasing of specific brands of proprietary medications. It may be that it is here that advertising finds its greatest effect. We were unable to show, at least indirectly that advertising has an effect (at least in terms of mere exposure) on increasing the overall consumption of O-T-C drug products. Perhaps advertising does not have its most potent effects until the consumer already has self-diagnosed symptoms of illness and has made the decision to purchase an O-T-C drug. At this point, advertising may affect what product brand the consumer will purchase.

Taken together, the two studies which have examined these data suggest that the presumed causal link which ties television viewing of O-T-C drug commercials and O-T-C drug use in a causal, stimulus-response, hypodermic needle relationship is too sweeping and simplistic an explanation. Certainly any theory which seeks to explain behavior in this area must take into consideration the environmental influences of interpersonal communication as well as individual, psychological outlooks concerning control over one's own health.

NOTES

[1]Drug use in both multiple disciminant analyses is a composite index of use across all the six product categories included in the survey.

[2]Professionals include all professional people in the health care system, e.g., doctors, pharmacists, nurses, dentists, etc.

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TABLE 1

Summary of Multiple Discriminant Analysis Model 1:
Received Advice Regarding O-T-C Drugs*

Discriminant Function Coefficients		Group Means	
Variable	First Function	Internals	Externals
Use O-T-C drugs	-0.19130	2.31	2.63**
Family advised	-0.30667	0.31	0.61***
Relative advised	-0.44652	0.01	0.12***
Friend advised	-0.33708	0.33	0.60***
Professional advised	-0.47466	0.77	1.16***

* Lambda = 0.9302, chi square = 13.72, df = 5, p = 0.017; the first function centroid was 0.26089 for internals and -0.26633 for externals.

** Univariate F-ratio (df = 1, 192), $p < .06$.

*** Significant univariate F-ratio (df = 1, 192), $p < .05$.

TABLE 2

Summary of Multiple Discriminant Analysis Model 2:
Sought Advice Regarding O-T-C Drugs*

Discriminant Function Coefficients		Group Means	
Variable	First Functions	Internals	Externals
Use O-T-C drugs	-0.29564	2.31	2.63**
Asked family member	0.42041	0.19	0.17
Asked friend	-0.48334	0.17	0.39***
Asked professional	-0.47741	0.47	0.77***
Asked another person	-0.30241	0.04	0.09
TV ads affect purchases	0.34864	1.17	1.10

* Lambda = 0.9333, chi square = 13.04, df = 6, p = 0.042; the first function centroid was 0.25490 for internals and -0.26021 for externals.

** Univariate F-ratio (df = 1, 192), $p < .06$.

*** Significant univariate F-ratio (df = 1, 192), $p < .05$.

APPENDIX A

Health-Related Locus of Control Scale*

1. If you wait long enough, you can get over most any disease without getting medical aid.

2. Good personal health depends more on an individual's strong will power than on vaccinations, shots and medicines the doctor would give you.

3. Some drugs you don't need a doctor's prescription for are still better than prescribed drugs for curing illness.

4. No matter how well a person follows his doctor's orders, he has to expect a good deal of illness in his lifetime.

5. A person understands his own health better than most doctors do.

* All items were modified Likert items (agree, not sure, disagree)